August 2013

IT Application Development Support

1.0 Introduction

Arcata requires support to meet development and administration needs in the quickly growing Dryden Flight Research Center (DFRC) Application Development environment.

The high volume of requests for development by Dryden's current software development staff has resulted in a backlog of development projects.

2.0 Scope

The work envisioned under this effort includes development of new applications, as well as support and augmentation of existing applications, based on requirements documents provided to the contractor by Arcata. The primary responsibility of the contract development staff will be to support the design, development, and implementation of specific development projects. This could include SharePoint, SQL, suppot existing and new COTS/GOTS, and/or integration of COTS/GOTS products. Specific requirements will be provided for each undertaking. Sample requirements for a SharePoint and SQL development project have been included in Exhibit 1.

3.0 Skillsets Required by Development Platform

Arcata envisions services provided by a contractor that employs many different types of developers with varying skillsets, which will enable augmentation of Arcata's development and application administration staff based on skillset requirements.

1. SharePoint Development Projects:
    a. Partner with customers to formulate business requirements, design, develop, test, and implement SharePoint Team sites utilizing SharePoint 2010/2013 environment.
    b. Web part and user control development.
    c. Form development, including integration with back end databases.
    d. Workflow development using SharePoint Designer.
    e. Build and edit web-based access views and reports used to transfer data to customers as approved.
    f. Integrate non-SharePoint related services into SharePoint applications as needed (i.e., Remedy, Oracle Databases, SQL Databases, File Shares).
    g. Development of Business Intelligence dashboards and reports to accurately reflect metrics as requested by customer.
    h. Create and provide documentation to SharePoint developers.
2. SQL Development Projects:
    a. Partner with customers to formulate business requirements, design, develop, test, and implement SQL Applications utilizing existing SQL Server 2008 environment.
    b. Analyze the business requirements and translate them into entities/objects.
    c. Define tables, data types, identity column, primary key column(s), and indices.
    d. Define relationships including one-to-one, one-to-many, many-to-many relations, left, right, inner and outer joins, and sub-queries.
    e. Create an ERD (Entity Relationship Diagram) for visualizing relationships.

f. Create and provide database documentation to application developers.
g. Using T-SQL create stored procedures, triggers, and functions.
h. Performance tuning of queries including analysis of execution plans.
i. Development of database-driven web pages in ASP.NET MVC, HTML5, CSS3 and JavaScript.
j. Install SSRS (SQL Server Reporting Services). Configure the service account, FQDN (Fully Qualified Domain Name), define data sources, and create reports using the Report Designer tool.
k. Mobile application development. Design, code, test, and troubleshoot applications for iOS, Android, and Blackberry devices.

3. Application Administration Support

a. Install, configure, upgrade/patch, and assist users with a variety of applications. Applications include database-driven web sites, database-connected end-user-installed thick clients, and both COTS and internally developed applications.
b. Provide support for COTS applications including, but not limited to Xerox DocuShare, ESi WebEOC, Deltek Cobra, Realization Concerto, JollyTech Lobby Track, Schneider Electric ION Enterprise, IBM Rational DOORS, SAS, FileMaker, Microsoft SharePoint, VisualSVN Server, BMC Remedy, MagicDraw UML.
c. Configure, monitor, and maintain application technical controls per the established System Security Plan. Create and maintain concept of operation document and diagram in support of the System Security Plan.
d. Author Tier 0 tech support content for use by end users and Tier 1 content for Service Desk personnel.
e. Serving in a Tier 2 position, accept service requests and incidents escalated from Tier 1 and work to resolution. This may include visiting the customer.
f. Installation and configuration of web servers, including the following: HTTP redirects, port and protocol bindings, requesting and installing TLS certificates, requesting IPs and DNS records (A and CNAME), configuring server processes to run under service account identities, configuring the default document types.
g. Develop database-driven web pages in ASP.NET MVC or ColdFusion, using HTML5, CSS3 and client-side JavaScript.
h. Install new instances of the database engine. Secure multiple instances on a single server by isolating them using separate service accounts as the identity for the engine and agent.
i. Configure the network connections such as named pipe and TCP/IP including applying TLS certificates to encrypt the connection.
j. Define System, User, and File DSNs using both the 32-bit and 64-bit ODBC tools.

4.0 General Requirements

All Developers:

1. Provide input to the scheduling and coordination of projects to include involvement in the design phase. Conduct analysis and determine information needs and elements, data relationships and attributes, proposed manipulation, data flow, storage requirements, data output and reporting capabilities.

2. Attendance at status meetings will be required as scheduled by the Arcata Application Development Supervisor.
3. Work closely with the Arcata Server Administration and Database Administration teams as needed.
4. Fully document all products produced in accordance with guidelines provided by Arcata application development supervisor.
5. Create end user guides in Microsoft Word for each product produced.
6. Diagnose and resolve configuration issues, as well as connectivity and authentication issues.
7. The contractor shall assist NASA in the development of applicable documentation required by NPR 7120.7. NPR 7120.7 is the NASA Information Technology and Institutional Infrastructure Program and Project Management Requirements Document.

5.0 Assumptions

1. Estimated hours per project will be provided by the contractor. Arcata will review and approve the estimated number of hours required to complete each project.
2. Personnel will be located on-site at NASA Dryden Flight Research Center, Edwards, Califorinia. All work will be completed on the Government provided computer system. No other systems are to be utilized for work on this Government project.
3. All development work will be completed on development servers where applicable. Projects will be reviewed by the Arcata Associates Lead or lead developer before transitioning to the production environment.
4. The Government will provide user accounts and security authentication devices and services as necessary to conform to Government IT security policy.
5. The Government will provide access to source code and supporting information as necessary to conduct specific tasks.
6. All work must be completed by United States Citizens within the confines of the continental United States.
7. Communication Skills: Developers must possess excellent verbal and written communication skills.
8. Arcata will be allowed to review resumes of potential developers and to interview them (if deemed necessary) before he or she is assigned to work with Arcata.
9. A non-disclosure agreement shall be executed prior to initiation of contract work.
10. Support will be incrementally funded by the Government. At no time is work authorized beyond the funding currently available on the contract unless authorization is granted in writing by Arcata's Logistics Manager or their designee.
11. The Government will not be held liable for cost overruns beyond obligated funding.
12. The contractor will be paid for Government holidays.
13. In the event of a Government shut-down or budget action, contract will be suspended until Government facility reopens or Government funding has been reinstated depending upon circumstance of suspension.
14. All work products shall become the property of NASA. No copies are to be kept by the contractor. The Contractor will relinquish all rights to code, products developed, and documentation to NASA.

6.0 Deliverables

1. Progress Reports: Written descriptions of activity and accomplishments shall be delivered as required on a weekly and monthly basis.

2. Weekly status review and demonstration of work products will be conducted in weekly status meetings. Contractor shall demonstrate capabilities of work product currently in development.
3. End user guides will be created in Microsoft Word for all developed or augmented applications.
4. If deemed necessary by Arcata, contractor will conduct a code walkthrough of applications developed or augmented.
5. If identified as appropriate for specific tasks, deliverables may include installation or configuration of third party hardware and software.

7.0 Optional Periods of Performance (Must be exercised by written contract modification and signed by both Arcata's Procurement Department and company representative)

1. Option 1 – Extensions may be granted beyond January 31, 2014. If an extension exercised it will be granted in either one month, three month or six month increments.

8.0 Security Clearances

The contractor personnel shall be able to obtain and maintain appropriate security clearances which requires United States citizenship.

9.0 Cost

Hourly cost will be provided by Skillset in bid submitted in response to the RFP:

a. Hourly Rate for a SQL Developer
b. Hourly Rate for a SharePoint Developer
c. Hourly Rate for a Applications Administrator

10.0 Past Performance

Interested parties must submit references and examples of past performance in similar contract arrangements. Arcata reserves the right to contact references provided to verify quality of work.

11.0 Safety and Quality

The following will outline the contractor's role and responsibilities with compliance to DFRC standards.

A. Safety

It is the responsibility of the entire workforce at DFRC to be aware of, and strictly adhere to all applicable safety standards. These regulations and standards can be found on Dryden Xnet under the SMA (Safety and Mission Assurance) heading. IT Security personnel are responsible for the following.

1. Equipment Operation

- Awareness of equipment hazards located in each area of shop.
- Proper operation of equipment in accordance with applicable DEI (Dryden Equipment Instruction).

2. General Safety

- Awareness of Close Call reporting system.
- Awareness of importance of general work area housekeeping.
- Awareness of proper work attire.
- Avoidance, notification and removal of slip or trip hazards.
- Awareness of Sub-floor hazards and Fire safety systems.
- Awareness of building evacuation procedures.

B. Quality Assurance

To ensure the highest level of safety and mission assurance, DFRC has implemented the ISO 9000 program. The implementation plan is outlined in the DMSM (Dryden Management System Manual). This manual and all related documents can be referenced on Dryden Xnet. At the beginning of each task, the contractor will reference applicable DFRC instructions. The instructions on these documents will be followed until the assigned task is completed.

NOTE: All applicable documentation annotated in this section will be provided to the successful bidder via e-mail or CD.

12.0 Period of Performance and Schedule:

Period of Performance will begin within 2 weeks following award of contract. Period of performance may be ended early by either party for any reason by serving written notice at least two weeks prior to adjust end date of the engagement.

A detailed schedule with milestones will be developed to track progress and ensure development is progressing within the agreed upon time frame.

13.0 Invoicing Instructions:

Contractor may invoice Arcata Associates, Inc. bi-weekly or monthly beginning two weeks after work begins.

Exhibit 1

Sample SharePoint Development Project
Automation of Document Review System

1.0 Overview:

Technical reviews are conducted on a number of documents, including design reviews, statements of work, contracts, health and safety plans, etc, within the disciplines of safety, occupational health, and environmental compliance. Currently, the system uses an Excel spreadsheet to track document progress and FileMaker Pro to capture comments from the disciplines. In addition, the current process includes a number of manual steps. We have reviewed the document review process with the goal of identifying and implementing improvements. This analysis has identified improvements in the process that would be gained by combining a number of individual steps and integrating the entire process in a single SharePoint application.

2.0 Requirements:

2.1. Scenario:

2.1.1. Document Coordinator receives document for review

2.1.2. Coordinator logs document into database:

- Document name
- Document review number
- POC data
- Date received
- POC's requested review period
- Granted review period
- Date document submitted to subject matter experts (SME)
- Date SME accepts/declines review (Y/N)
- Date POC is notified document is approved or Code SH comments sent to POC
- Date POC returns corrections
- Date POC's corrections accepted by SMEs

2.1.3. Coordinator attaches document to database electronically; or, if drawings, hand delivers to Subject Matter Experts (SMEs)

2.1.4. Coordinator sends notification email to SMEs that document is available for review and date review is to be complete (if possible, the database should do this but if not possible, this would be done using Outlook)

2.1.5. SMEs respond (If possible, the database should do this but if not possible, this would be done using Outlook):

- Accept review assignment
- Decline review assignment

2.1.6. SMEs that accept assignment complete comment sheet inside database

- SME notifies Coordinator when comments are complete (If possible, the database should do this but if not possible, this would be done using Outlook)
- Comments form should have the following boxes:
  - Document accepted with comments to be incorporated (POC does not need to respond)
  - Document accepted as written

2.1.7. Document approval not recommended (POC needs to respond to comments)
2.1.8. Coordinator generates comment report
- Database should create report by collating all the SME comments, classifying them by SME
- If SME checked the No Comments box, database should put “None” under the SME name (classification)
- Report should be automatically sent to POC (or posted if on web, and POC notified)
- Report should state status of review; e.g. “Document accepted as written”, etc. Note: database use Boolean logic to interpret SME’s desires and make a collective statement; if not, then the SME direction should be given within each SMEs classified space

2.1.9. POC notifies database when responses to comments are complete and database notifies Coordinator and all participating SMEs (If possible, this should be done within the database but if not possible, this would be done using Outlook)
2.1.10. SMEs review POC response and:
- Checks “Accepted” box on form
- Or makes new comment and checks “Do again” box

2.1.11. Database should send a reminder to all SMEs that have not completed their review within 8 days
2.1.12. POC is notified by database or Outlook when SMEs complete their reviews
- If no further comments, notification should state the documents have been approved
- If further comments, notification should state that the POC needs to revisit the comment form

2.1.13. Database should be able to archive based on the “document review number”
2.1.14. Database should be able to control versions so that changes cannot be made to comments once they are completed except by the author of the comment
2.1.15. Database should be able to prepare graphical reports showing such statistics as average SME response time, average process completion time, etc.
2.1.16. Specify figures of merit for each task.
2.1.17. Describe the environment in which the requirements are to operate (physical, operational, organizational, etc.).
2.1.18. Describe the support policy intended to sustain the requirement throughout its lifetime. Investigate alternative support models. Include the following issues where applicable:
- Diagnostic requirements.
- Support and test equipment policy.
- Maintenance and repair logistics.
- Personnel support policy (Number, skills, know-how, etc.)
- Training and related equipment.
- Provisioning for spares, repair parts and supplies.
- Required facilities policy.
- Packaging, handling, storage and transport policy.
- Configuration management.
- Interfaces to existing co-functioning systems.
- Cite reference(s) where possible to add credibility to the existence of the need.

Sample SQL Development Project

1.0 SCOPE

1.1. Purpose

The purpose of this User Requirements Document (URD) is to describe a technological opportunity for improving the Code SH document review process. It presents the primary decision factors that should be considered at proposal evaluation.

1.2. Description

- This action is needed to improve the document review process to provide better customer service by expediting and simplifying the process
- Code SH is conducting a requirements analysis based upon current and forecasted capabilities in relation to projected demand for services or solutions
- This URD contains quantitative information to establish and justify the need

NOTE 1: The User requirements document is a summary document that describes the operational problem and presents major decision factors. The customer shall agree to this statement.

NOTE 2: Detailed quantitative and analytical information should be included as attachments.

2.0 APPLICABLE DOCUMENTS

- List CCR Form
- List WWW Document Approval Form
- List any other attachments to this document

3.0 USER REQUIREMENT STATEMENT FOR THE DOCUMENT REVIEW PROCESS

3.1. Background

Code SH conducts technical reviews of a number of documents, including design reviews, statements of work, contracts, health and safety plans, etc, within the disciplines of safety, occupational health, and environmental compliance. Currently, the system uses an Excel spreadsheet to track document progress and FileMaker Pro to capture comments from the disciplines. In addition, the current process includes a number of manual steps. As part of the Transforming Dryden process, SH is reviewing the document review process with the goal of identifying and implementing improvements. This analysis has identified improvements in the process that would be gained by combining a number of individual steps and integrating the entire process in a single application.

3.2. Requirements Area

This should describe detailed roles or task requirements.

- Define typical task profiles for primary and secondary task requirements.
- Elaborate on tasks as needed using scenarios.

3.2.1. Scenario:

3.2.1.1. Document Coordinator receives document for review

3.2.1.2. Coordinator logs document into database:

- Document name
- Document review number
- POC data
- Date received
- POC's requested review period
- Granted review period
- Date document submitted to subject matter experts (SME)
- Date SME accepts/declines review (Y/N)
- Date POC is notified document is approved or Code SH comments sent to POC
- Date POC returns corrections
- Date POC's corrections accepted by SMEs

3.2.1.3. Coordinator attaches document to database electronically; or, if drawings, hand delivers to SMEs

3.2.1.4. Coordinator sends notification email to SMEs that document is available for review and date review is to be complete (if possible, the database should do this but if not possible, this would be done using Outlook)

3.2.1.5. SMEs respond (If possible, the database should do this but if not possible, this would be done using Outlook):

- Accept review assignment
- Decline review assignment

3.2.1.6. SMEs that accept assignment complete comment sheet inside database

- SME notifies Coordinator when comments are complete (If possible, the database should do this but if not possible, this would be done using Outlook)
- Comments form should have the following boxes:
    - Document accepted with comments to be incorporated (POC does not need to respond)
    - Document accepted as written
    - Document approval not recommended (POC needs to respond to comments)

3.2.1.7. Coordinator generates comment report

- Database should create report by collating all the SME comments, classifying them by SME
- If SME checked the No Comments box, database should put "None" under the SME name (classification)
- Report should be automatically sent to POC (or posted if on web, and POC notified)
- Report should state status of review; e.g. "Document accepted as written", etc. Note: database use Boolean logic to interpret SME's desires and make a collective statement; if not, then the SME direction should be given within each SMEs classified space

3.2.1.8. POC notifies database when responses to comments are complete and database notifies Coordinator and all participating SMEs (If possible, this should be done within the database but if not possible, this would be done using Outlook)

3.2.1.9. SMEs review POC response and:

- Checks “Accepted” box on form
- Or makes new comment and checks “Do again” box

3.2.1.10. Database should send a reminder to all SMEs that have not completed their review within 8 days

3.2.1.11. POC is notified by database or Outlook when SMEs complete their reviews

- If no further comments, notification should state the documents have been approved
- If further comments, notification should state that the POC needs to revisit the comment form

3.2.1.12. Database should be able to archive based on the “document review number”

3.2.1.13. Database should be able to control versions so that changes cannot be made to comments once they are completed except by the author of the comment

3.2.1.14. Database should be able to prepare graphical reports showing such statistics as average SME response time, average process completion time, etc.

3.2.1.15. Specify figures of merit for each task.

3.2.1.16. Describe the environment in which the requirements are to operate (physical, operational, organizational, etc.).

3.2.1.17. Describe the support policy intended to sustain the requirement throughout its lifetime. Investigate alternative support models. Include the following issues where applicable:

1) Diagnostic requirements.
2) Support and test equipment policy.
3) Maintenance and repair logistics.
4) Personnel support policy (Number, skills, know-how, etc.)
5) Training and related equipment.
6) Provisioning for spares, repair parts and supplies.
7) Required facilities policy.
8) Packaging, handling, storage and transport policy.
9) Configuration management.
10) Interfaces to existing co-functioning systems.
11) Cite reference(s) where possible to add credibility to the existence of the need.

3.2.2. Current Capability

Describe *quantitatively* the capability of current systems, facilities, equipment, or other assets currently in use to meet the user requirements.

3.2.3. Shortfall

Currently, there is no shortfall; the process and tools we are using do accomplish most of the tasks. However, there are a number of potential improvements. For

example, the FileMaker comment form does not have a provision for the document POC to use the form to respond to comments. Also, since only Code SH has access to the form, it must be printed and sent to the POC, and the form's format is often lost during printing. Typically the POC makes changes to the document and returns it to SH, which means the SME needs to refer to the original comment to understand the changes that were made. The technological opportunities are as follows:

- Improved productivity resulting from a one-time submission of the document (SH would rely on the POCs response to the comment form), improved communication between SH and POC,
    - Operational effectiveness due to the overall shortening of the document review time, creating less delay in the progress of projects
    - Efficiency due less shuffling of paperwork
    - Archiving would be made easier if all documents/correspondence were located in the unique review file (currently hard copies are manually filed)

3.2.4. Impact

If the process is not improved by a single application as we desire, we will continue to use Excel and FileMaker but the process will continue to be inefficient and thus slower. This will be more costly in terms of staff time and project delays

3.2.5. Time frame

The document review process is currently affecting Code SH staff and customers by taking excessive staff time and potentially delaying projects. If no action is taken, this situation will remain.

3.2.6. Criticality

This has been identified by Code SH, during Tranfoming Dryden workshops, as a high priority action for the entire office. Due to the lack of sufficient staff, improvements in this process are critically needed.

3.2.7. Resource estimate and constraints

Provide a rough estimate of the resources that will be needed to resolve the problem or achieve the technological solution. Address the following constraints if applicable:

1. Budget and cash flow.
3. Initial operational date.
4. The number of items to be produced.

Exhibit 2

Federal Government Holidays

New Year's Day
Birthday of Martin Luther King, Jr
Washington's Birthday
Memorial Day
Independence Day
Labor day
Columbus Day
Veterans Day
Thanksgiving Day
Christmas Day